

2020 Census 27-29. Post-Enumeration Survey (PES) Operations – 27. CMDE

Version: 5.4 – with Annotations v05b
 Revision Date: April 7, 2020



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Subject Matter Experts: Judy Belton, Nicholas von Stein, Timothy Kennel

Major Revision Change History				
Date	Description	Author	Version #	Page #'s
08/16/2016	Incorporated changes from SME Reviews	Dan Ladino	0.11-0.13	All
09/28/2016	Incorporated changes from SMEs/IPT	Dan Ladino Aurelia Gardner S. Goggin	0.14-0.26	Various
11/08/2016	Incorporated changes from CM Review	Dong-Nghi Hua	0.27	6-7
11/21/2016	Updates for baseline release (CR 117)	Dong-Nghi Hua	0.28	6
01/13/2017	Updates from CM Reviews (CR 157)	Dong-Nghi Hua S. Goggin	3.0	All
01/27/2017	Updates from CM Reviews (CR 162)	Dong-Nghi Hua	3.1	7-8
02/08/2017	Updates from CM Reviews (CR Pending)	Dan Ladino	3.2	9-15
02/14/2017	Updates for CM to PES change (CR 167)	Dong-Nghi Hua		All
02/27/2017	Updates from CM SME Reviews to create new baseline.	Dan Ladino	3.3	9-15
04/14/2017	Updates from CM Reviews	Dong-Nghi Hua	3.4	All
09/29/2017	Multiple updates to all sub operations	Dan Ladino Gwen Pennington Katherine Turel	3.18	All
11/06/2017	Multiple updates to Matching	Dan Ladino	3.21	All
01/17/2018	Multiple updates to the Matching BPM based on JAD sessions	Dan Ladino	3.22	All
05/31/2018	Updates from CM Reviews	Chidinma Oyedokun	4.1	4,7
07/26/2018	Multiple updates to Matching and Field Operation	Chidinma Oyedokun	4.2	4,11,13-16, 32 33,36,39,40 57,58,60-63
07/25/2018	Updates to CMDE processes	Monique Edmonds	4.4	60-78
09/04/2018	CR 3196	Monique Edmonds	4.0	All
12/04/2018	Updates to CMDE processes	Monique Edmonds	4.5	60-78
12/07/2018	Formatting & Pre-OII Process Updates	Monique Edmonds	5.0	All
05/21/2019	Updates from PES DOP Reviews WIP	MITRE	5.1	All
08/29/2019	Updates from PES DOP Reviews	MITRE	5.2	All
10/07/2019	Updates from PES CAPs Reviews	MITRE	5.3	All
04/07/2020	Updates from PES CAPs and I/O Reviews	MITRE	5.4	All

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Business Process Model

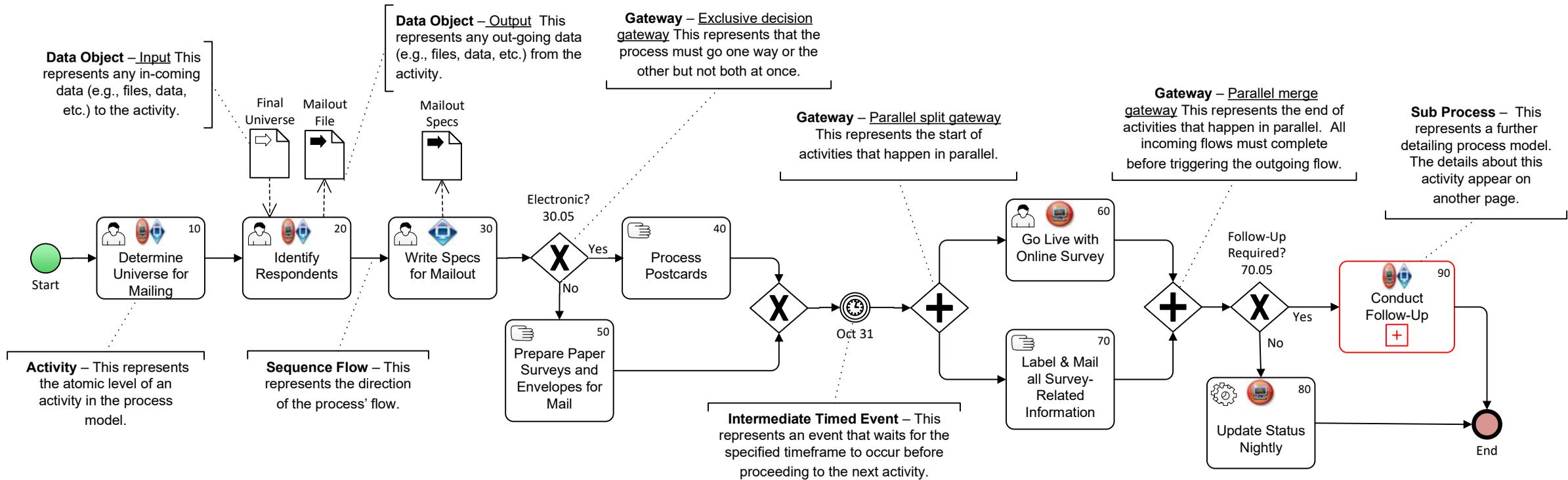
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Reading and Understanding the Model

Example Activity Model

BPM Purpose

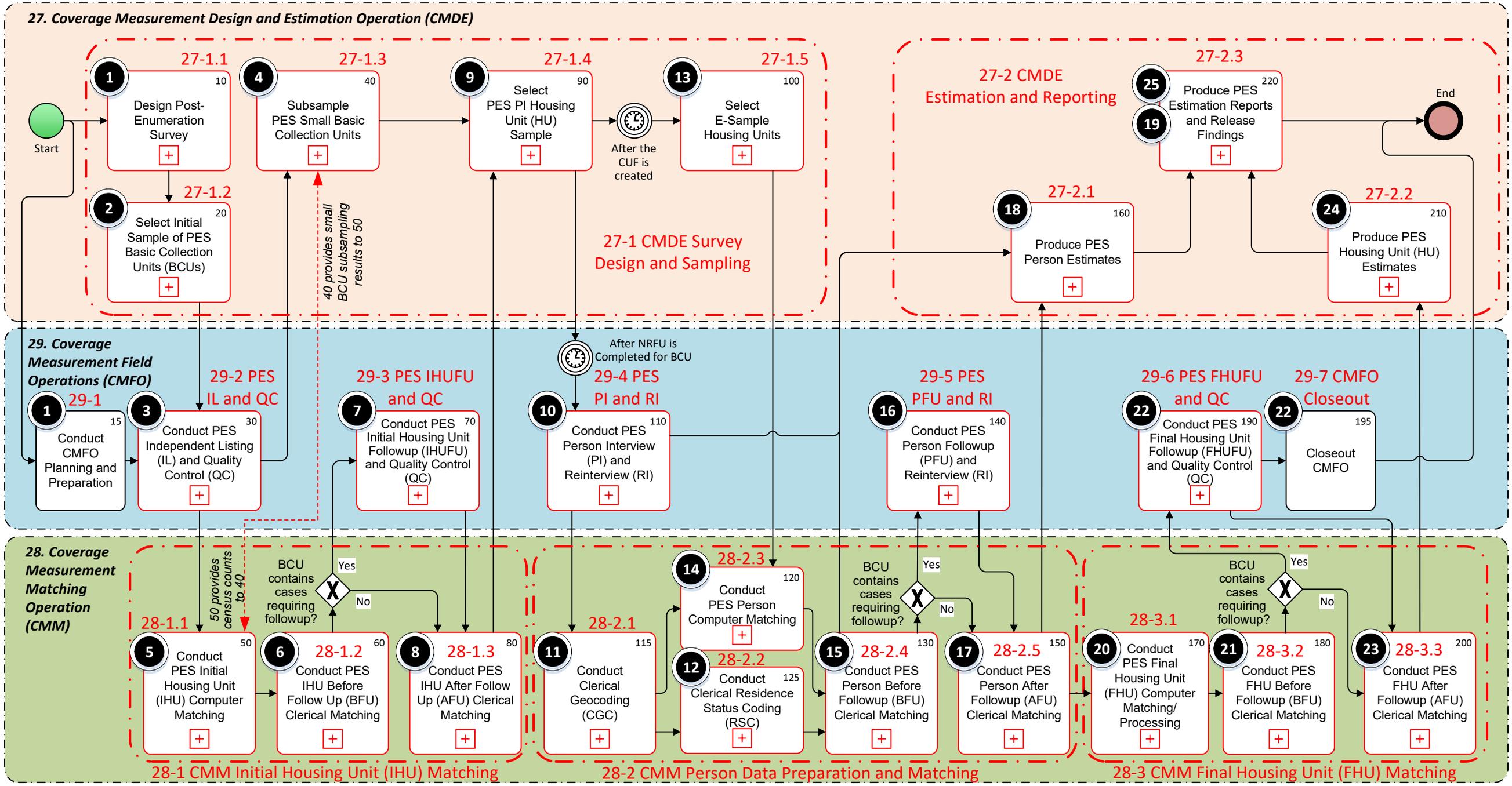
- Describe Census Operations business processes – activities, resources and key milestones
- Provide the details necessary for non-subject matter experts to understand the business process
- Contribute to the requirements development process
- Facilitate the linkage of business processes to IT capabilities
- Capture Operations inputs and outputs



Key:	Activities	Gateways	Data Objects	Other
Events				
Start:	Activity at atomic level:	Exclusive:	Input:	Sequence Flow:
End:	Activity containing a sub process:	Parallel:	Output:	Association:
Intermediate Timed Event:	Activity involving: → USER interacting with a system or software: Activity → MANUAL activity (no system/software involved): Activity → SERVICE or batch processing: Activity → Any system developed specifically for Census' use: Activity → Both a system developed specifically for Census' use <i>and</i> COTS products: Activity → SENDING a message: Activity → RECEIVING a message: Activity → RECURRING steps: Activity → Any commercial-off-the-shelf (COTS) products: Activity Activity	Event Based:	Data Store:	Annotation:
Flow continued on another page:				<small>This file is created by the SME before this process kicks off.</small>
Flow continued from another page:				

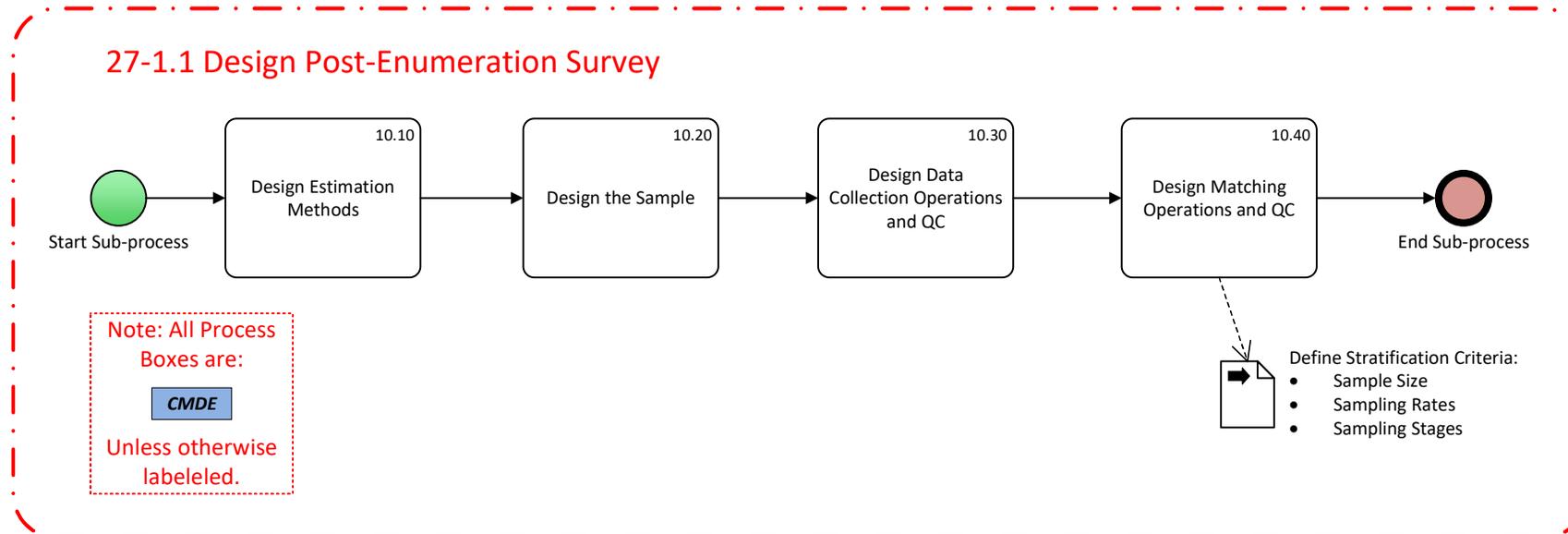
2020 Post-Enumeration Survey (PES) Operations

Purpose: To evaluate coverage of the 2020 Census in order to improve future censuses. The Census Bureau conducts the Post-Enumeration Survey (PES) to measure the coverage of the 2020 Census. The PES is designed to measure the coverage of housing units and people, excluding group quarters and people residing in group quarters.



CMDE: 10 Design Post-Enumeration Survey

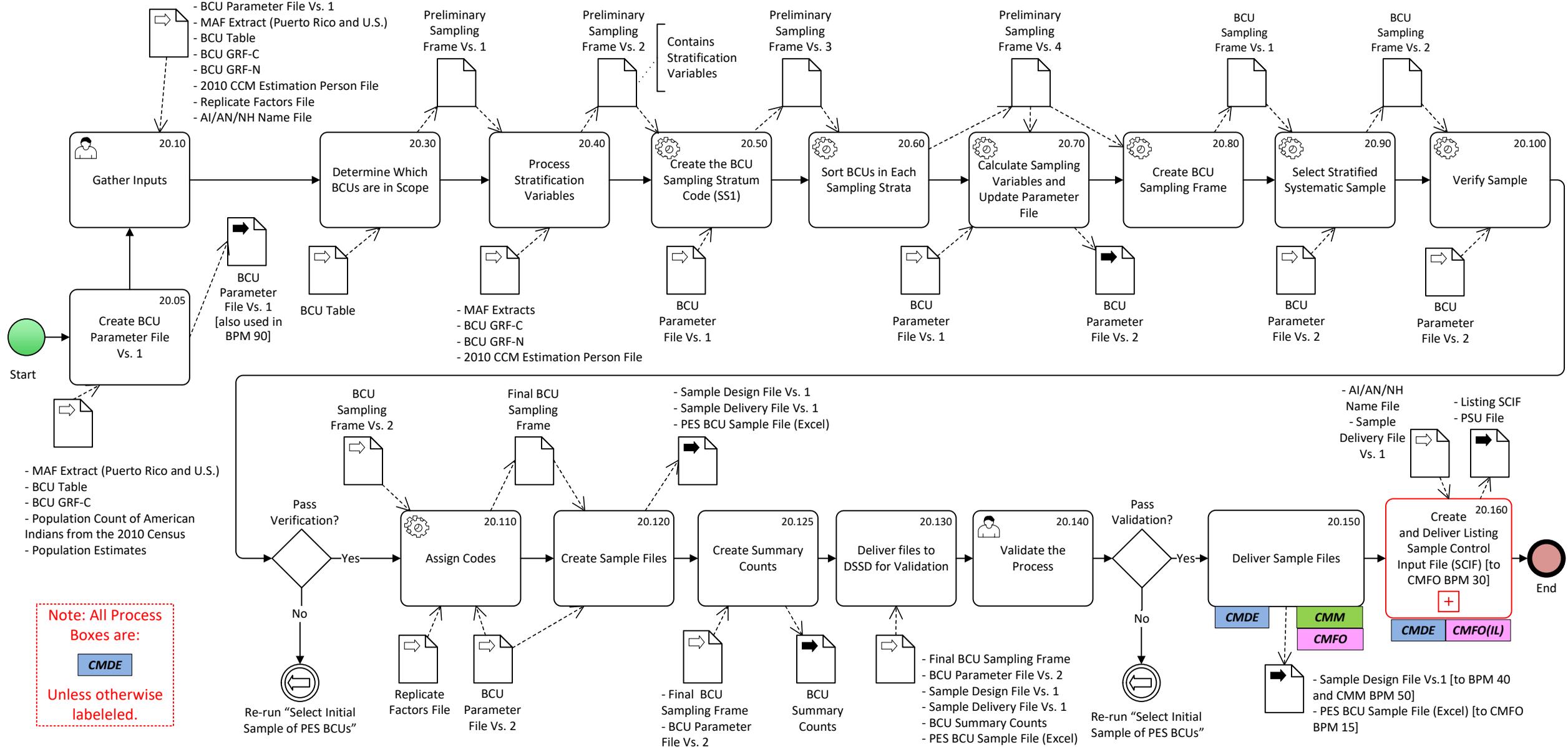
Purpose: This effort includes PES and sample design, including design of all sample selection steps, design of the data collection and matching operations, the quality control, and the estimation methods.



20 Select Initial Sample of PES Basic Collection Units (BCUs)

Purpose: To select an area sample of Basic Collection Units (BCUs) in the 50 states, the District of Columbia, and Puerto Rico for the CMFO Independent Listing (IL) field operation.

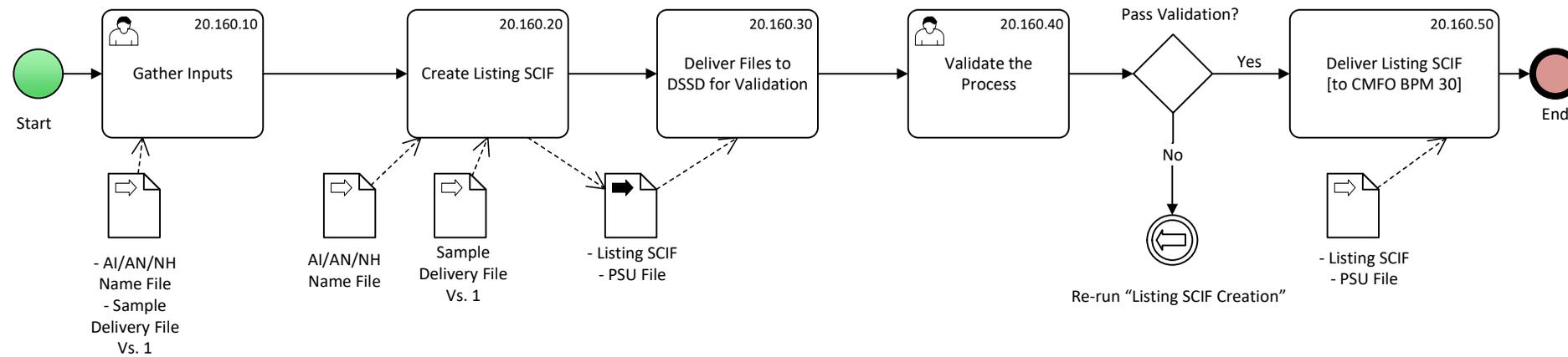
27-1.2 Select Initial Sample of PES Basic Collection Units (BCUs)



Note: All Process Boxes are: **CMDE** Unless otherwise labeled.

20.160 Create and Deliver Listing Sample Control Input File (SCIF)

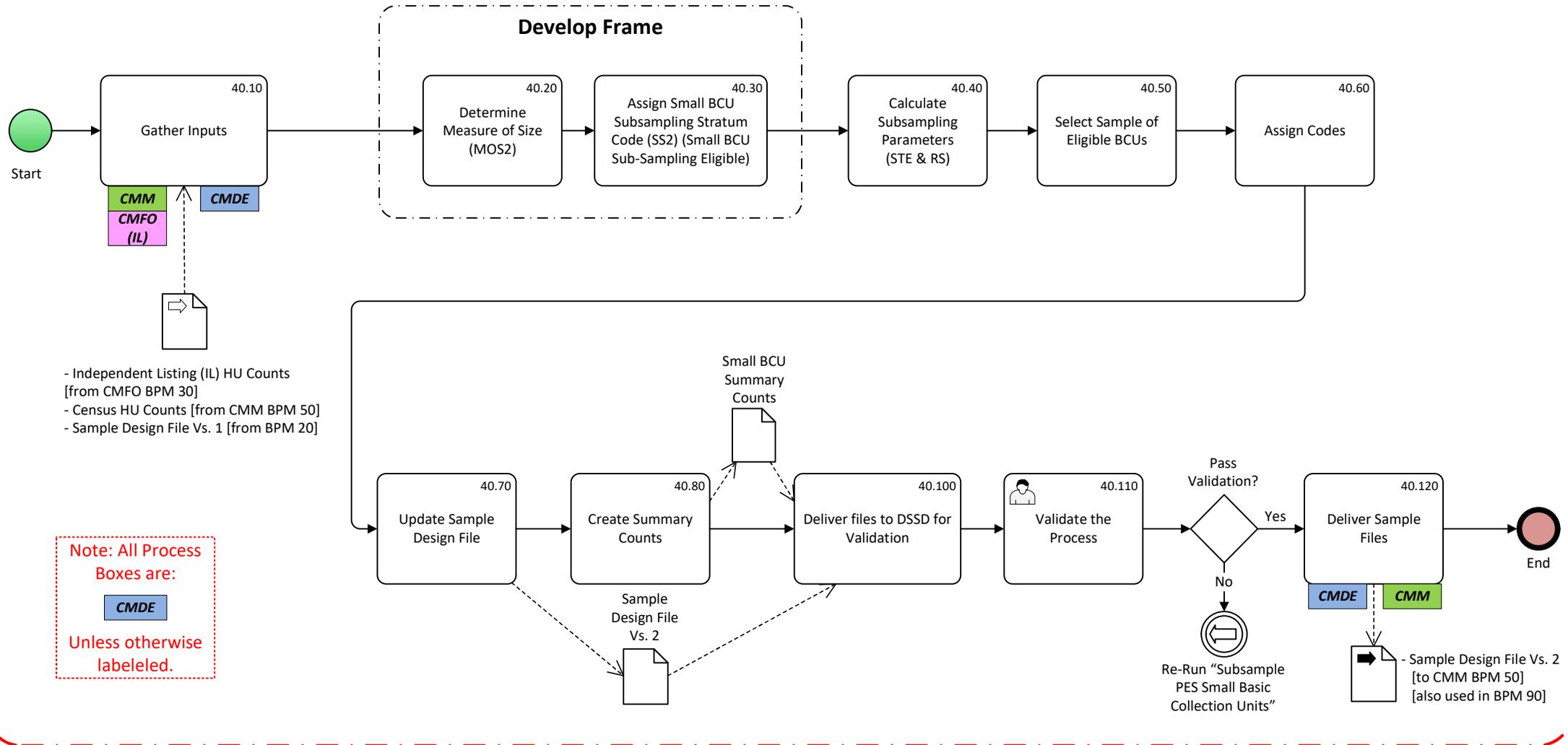
Purpose: To create and validate the Listing Sample Control Input File (SCIF) to be used as input to the CMFO Independent Listing field operation.



CMDE: 40 Subsample PES Small Basic Collection Units

Purpose: To re-stratify the small Basic Collection Units (BCUs) within each state and select a subsample of small BCUs to be included in CMM Initial Housing Unit Computer Matching.

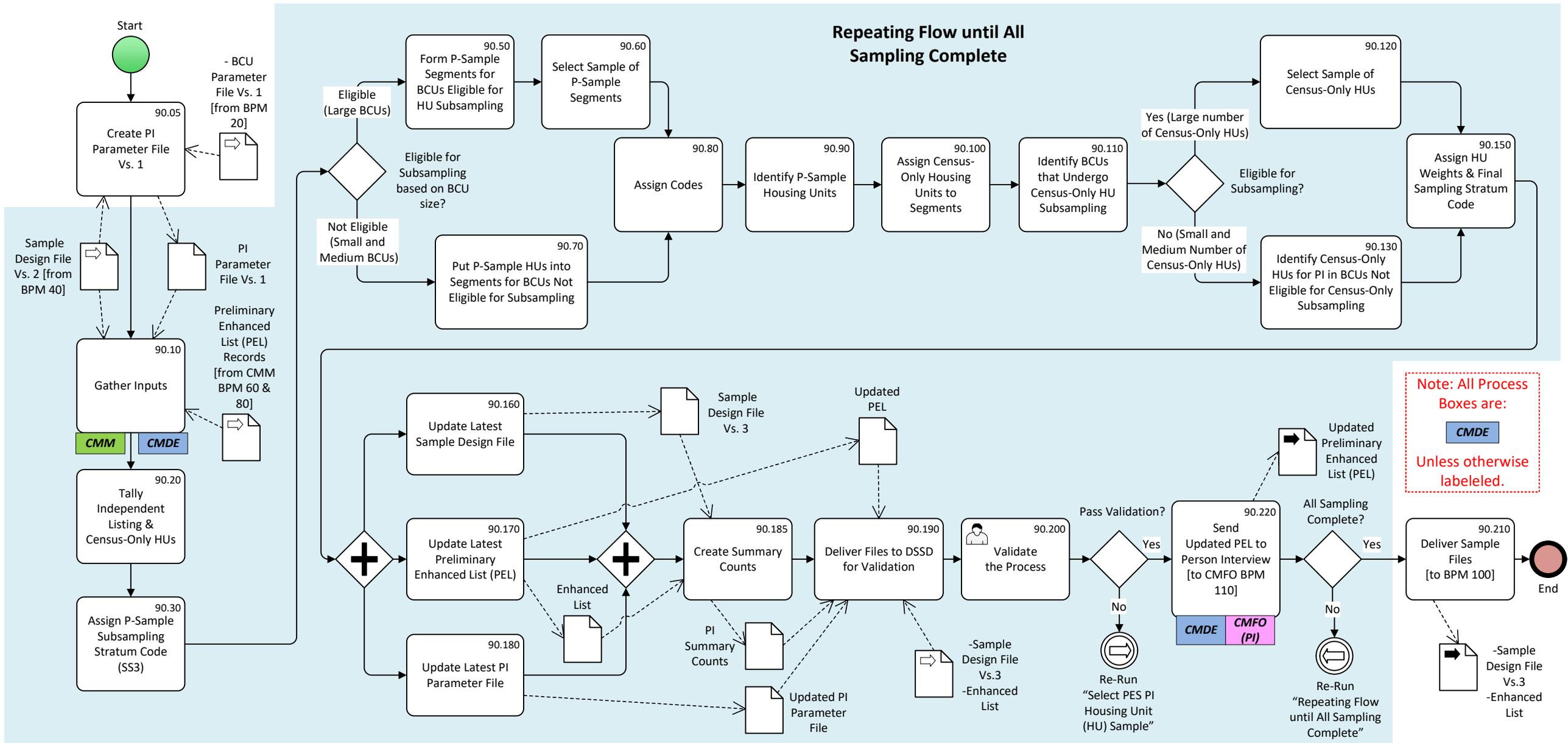
27-1.3 Subsample PES Small Basic Collection Units



CMDE: 90 Select PES PI Housing Unit (HU) Sample

Purpose: To identify all housing units (HUs) in the Person Interview (PI) workload. The PI workload includes the selected P-Sample HUs and census-only HUs in final sample of Basic Collection Units (BCUs).

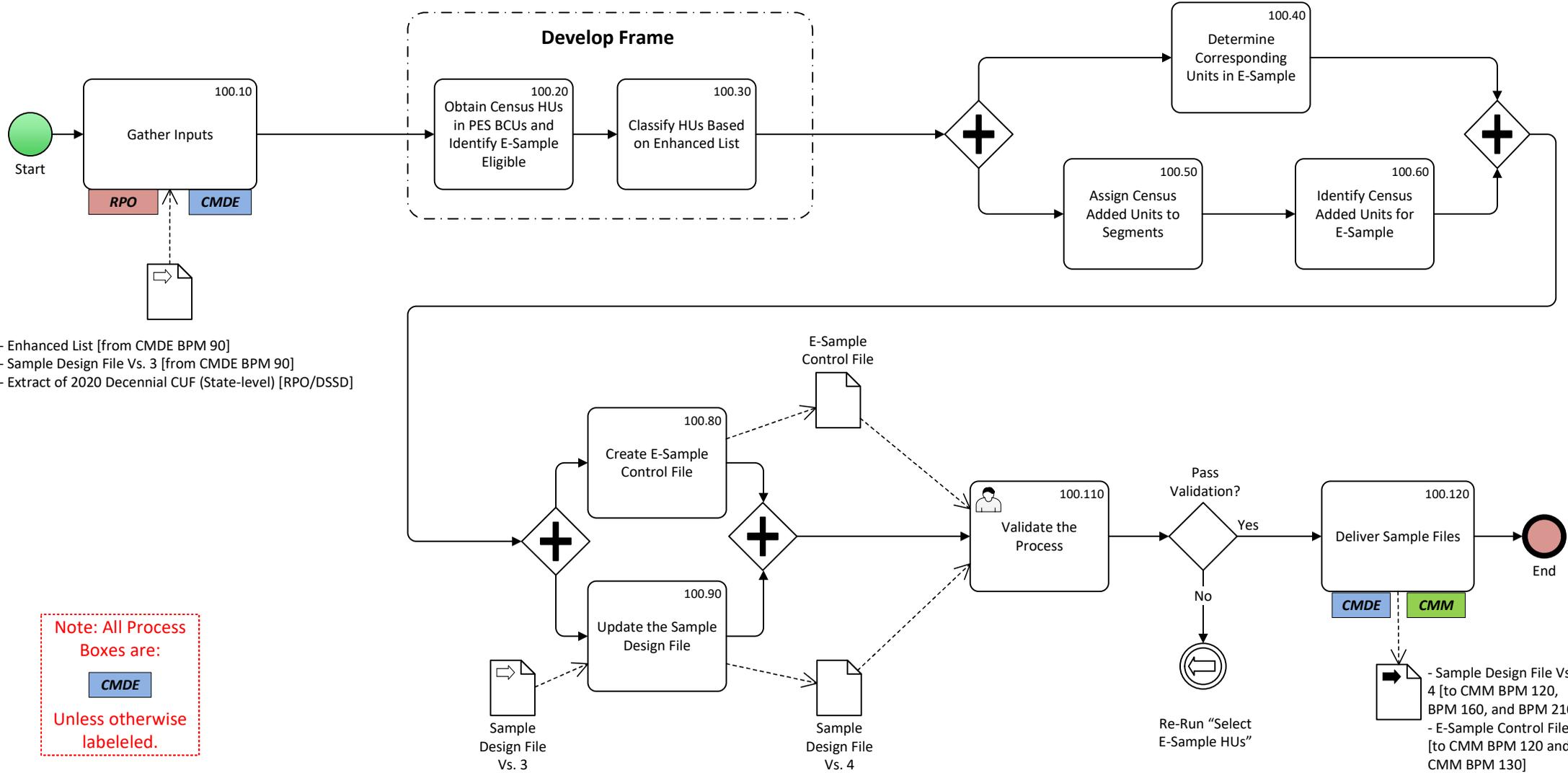
27-1.4 Select PES PI Housing Unit (HU) Sample



CMDE: 100 Select E-Sample Housing Units

Purpose: To identify the 2020 census housing units (HUs) in the sampled Basic Collection Units (BCUs) for the E Sample needed to conduct dual-system estimation.

27-1.5 Select E-Sample Housing Units



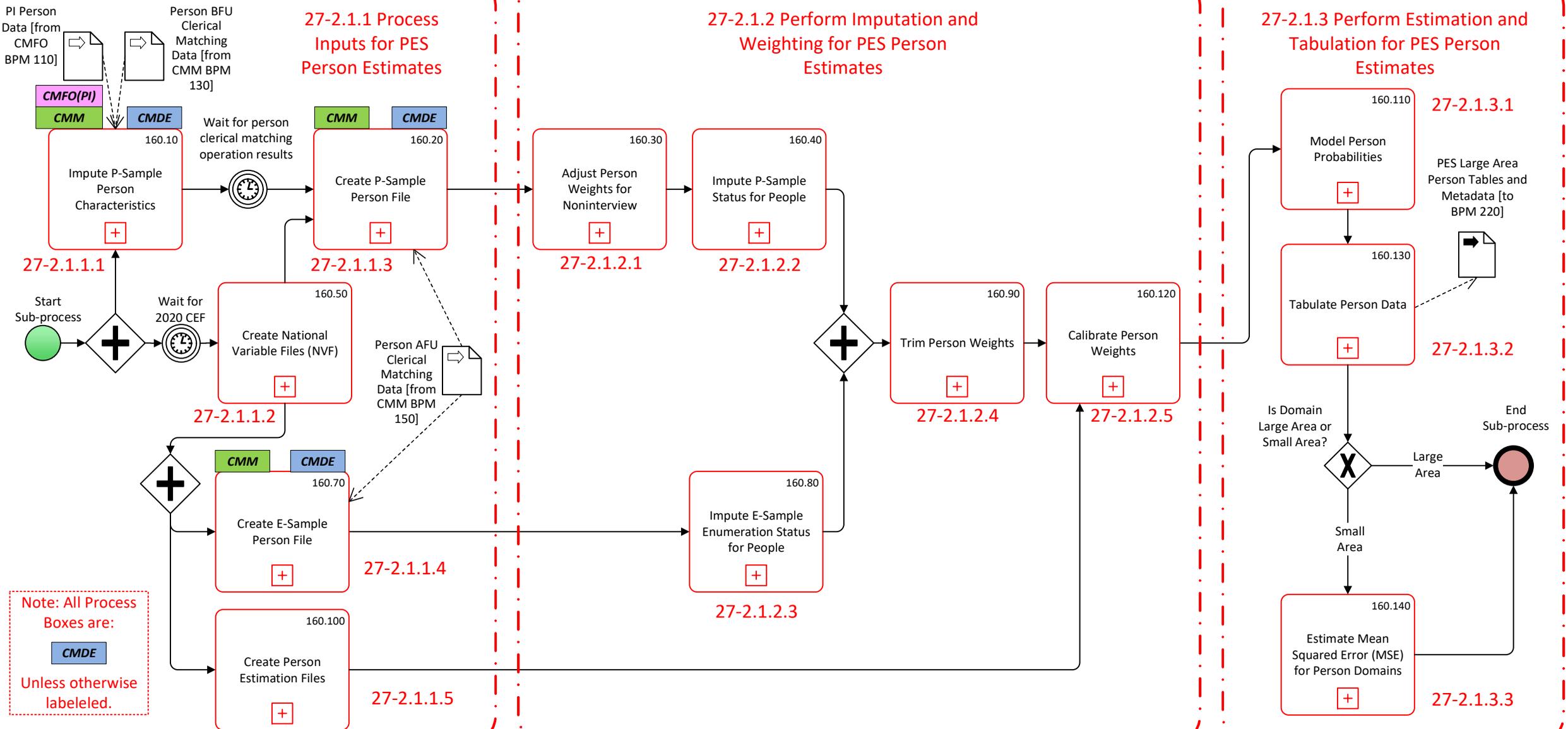


CMDE: 160 Produce PES Person Estimates

Purpose: The PES person estimation produces estimates of person coverage for the decennial census.

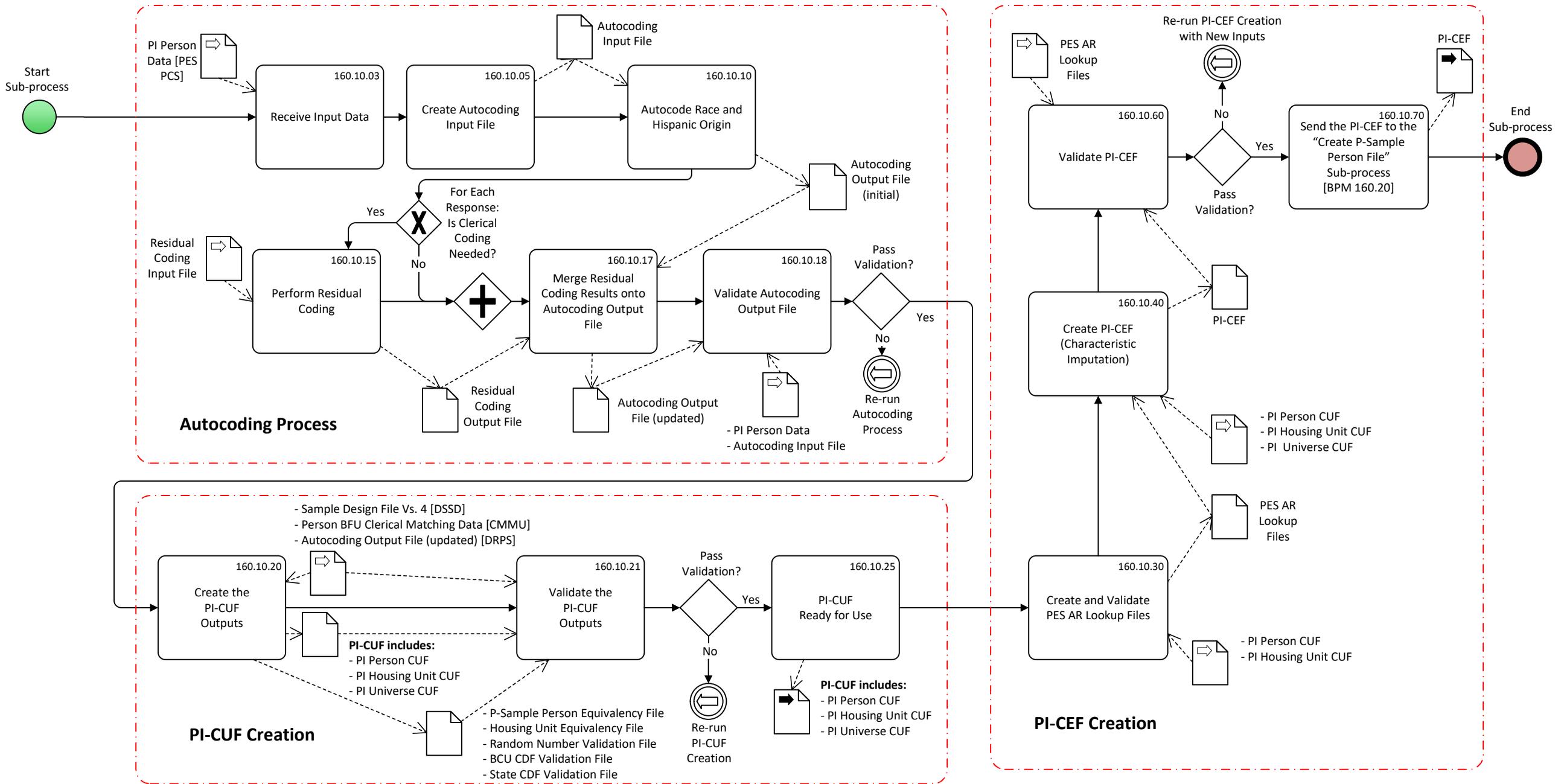


27-2.1 Produce PES Person Estimates



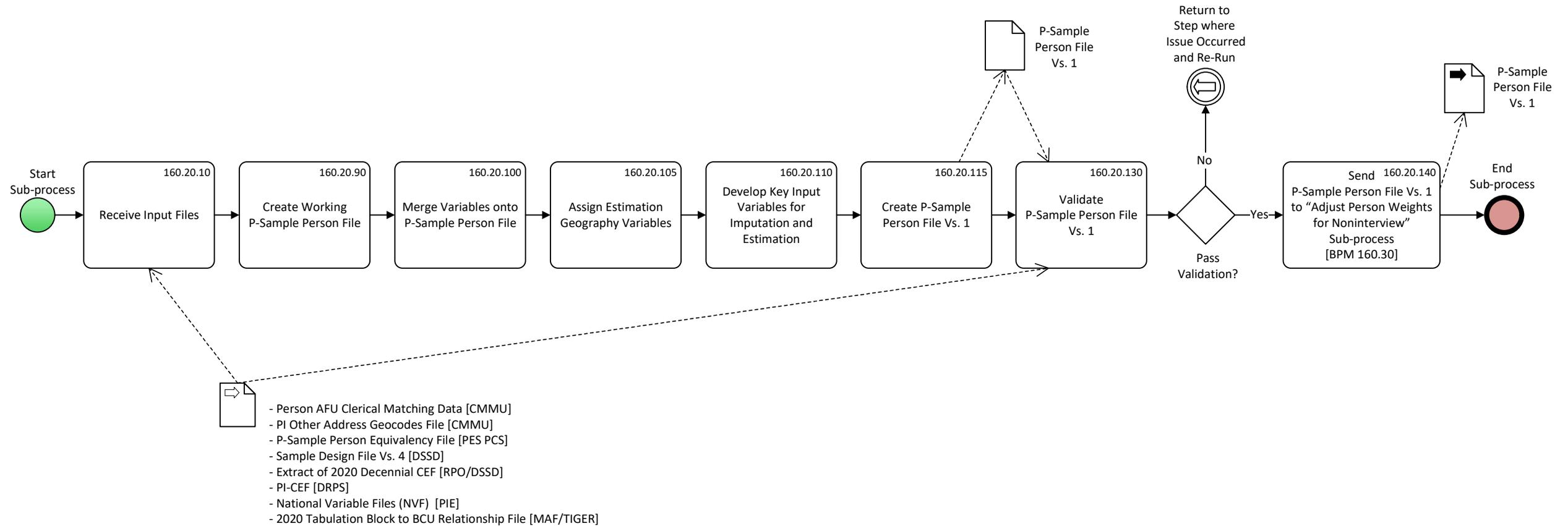
CMDE: 160.10 Impute P-Sample Person Characteristics

Purpose: This process imputes missing demographic characteristics for P-Sample people.



CMDE: 160.20 Create P-Sample Person File

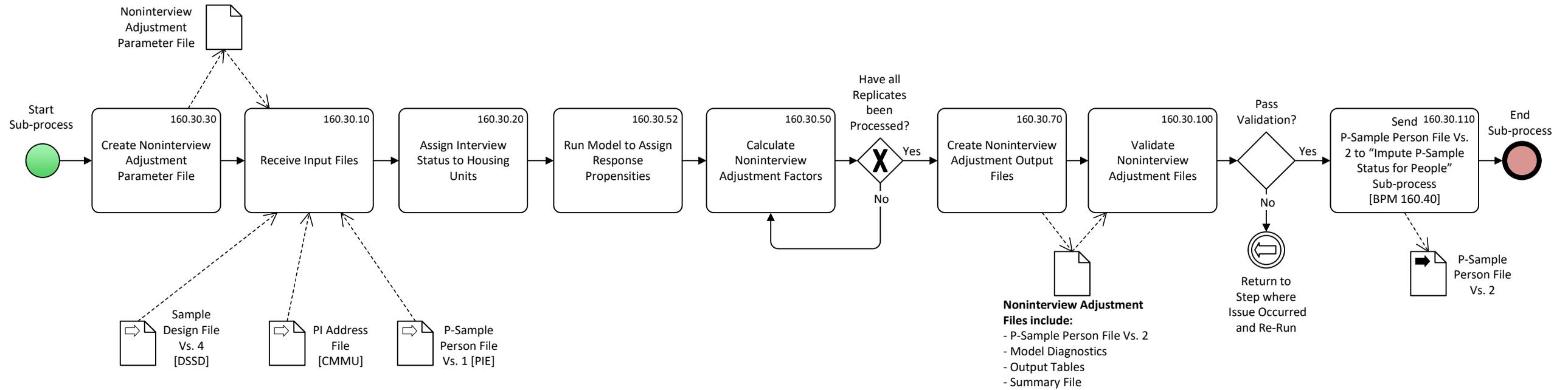
Purpose: This process creates the P-Sample person file. This file defines the P-Sample universe and is needed for estimation.





CMDE: 160.30 Adjust Person Weights for Noninterview

Purpose: This process adjusts person weights to account for a potential bias being introduced because of housing units that were not interviewed during Person Interview (PI).



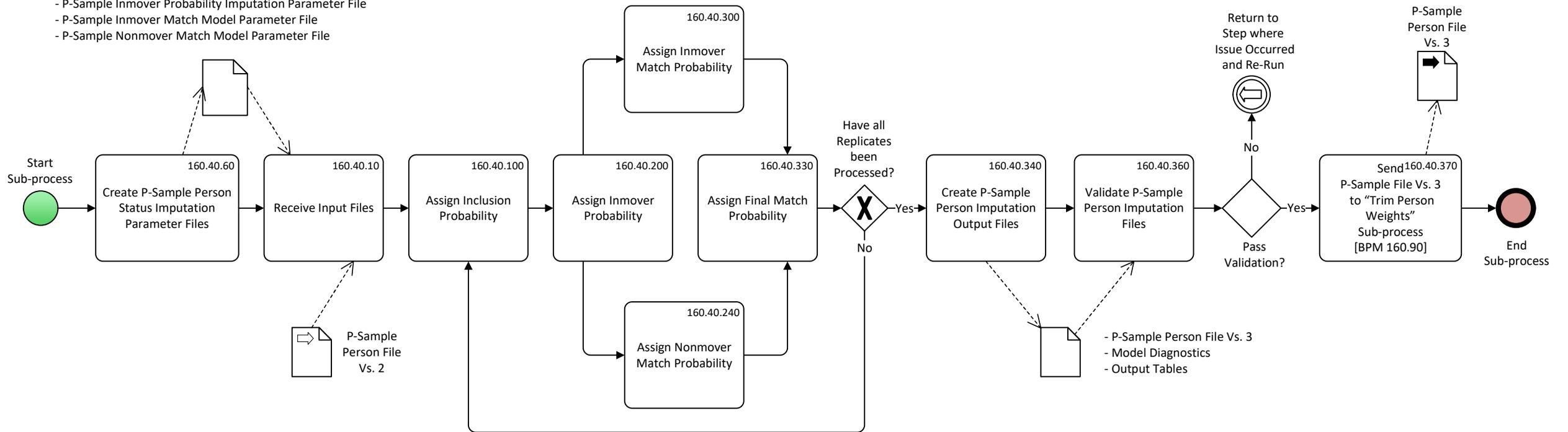


CMDE: 160.40 Impute P-Sample Status for People



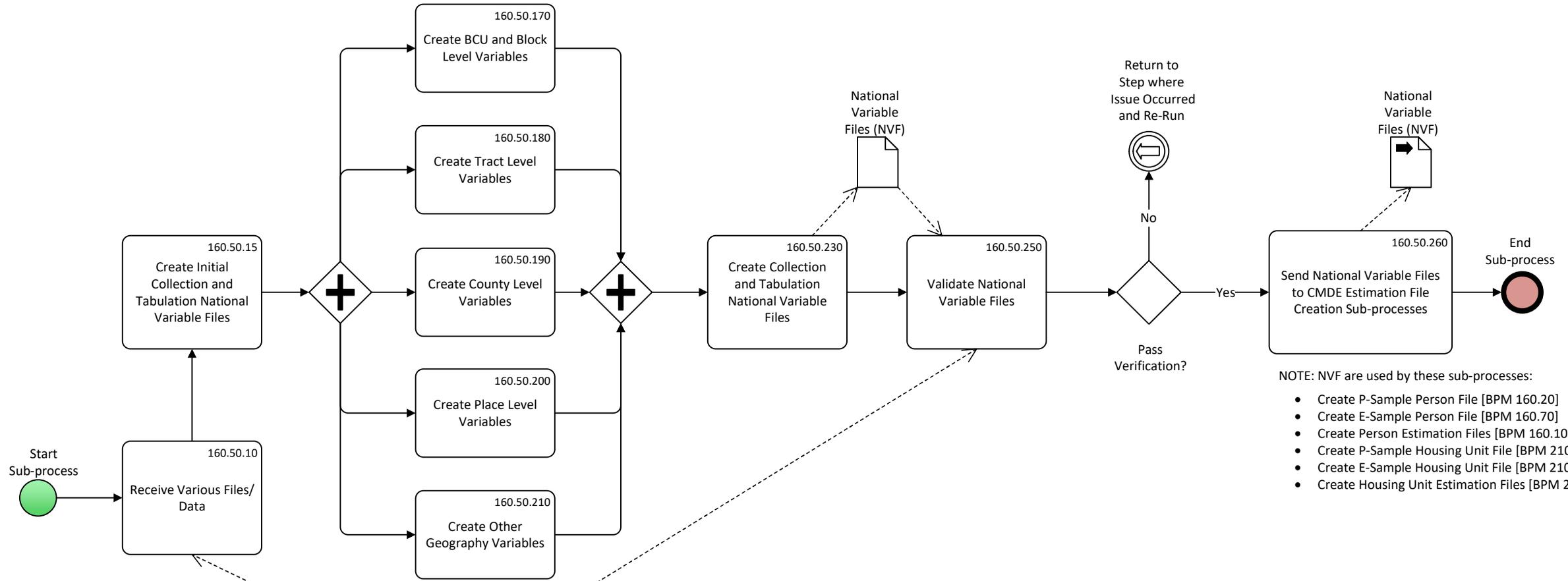
Purpose: This process imputes the inclusion status probability and match status probability for P-sample people with unresolved inclusion or match status.

- P-Sample Inclusion Probability Imputation Parameter File
- P-Sample Inmover Probability Imputation Parameter File
- P-Sample Inmover Match Model Parameter File
- P-Sample Nonmover Match Model Parameter File



CMDE: 160.50 Create National Variables Files (NVF)

Purpose: This process creates datasets of covariates that will be used for weighting, imputation, and estimation.

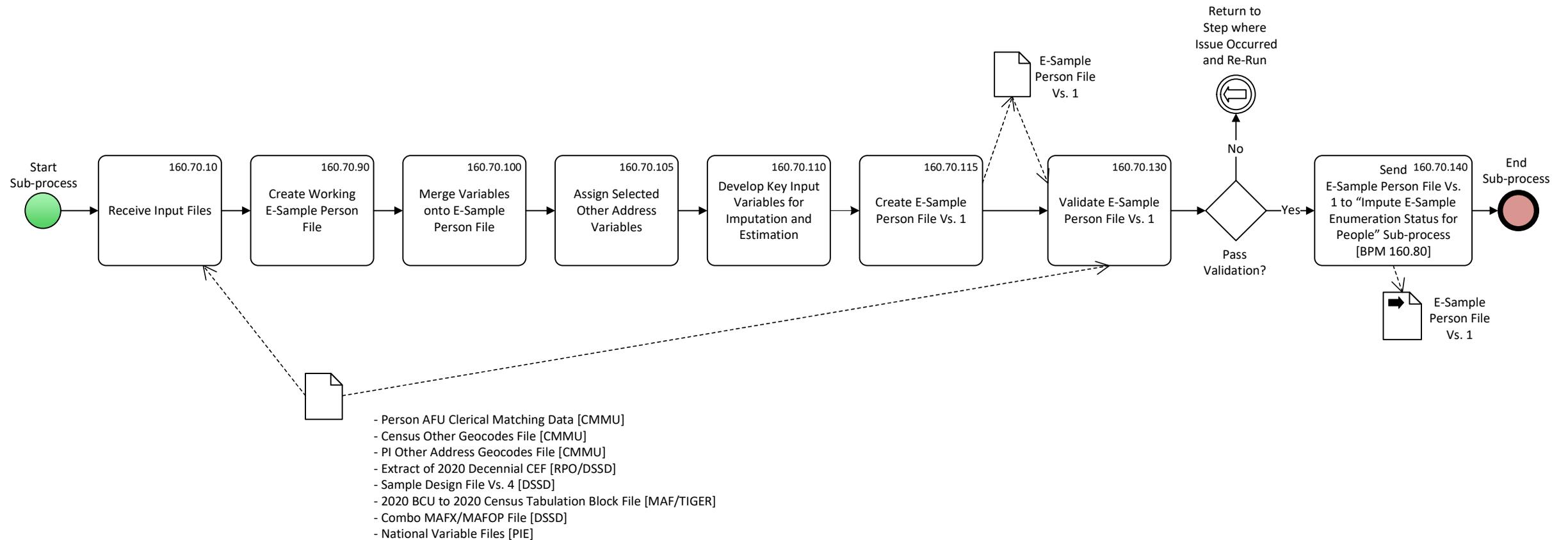


- NOTE: NVF are used by these sub-processes:
- Create P-Sample Person File [BPM 160.20]
 - Create E-Sample Person File [BPM 160.70]
 - Create Person Estimation Files [BPM 160.100]
 - Create P-Sample Housing Unit File [BPM 210.20]
 - Create E-Sample Housing Unit File [BPM 210.70]
 - Create Housing Unit Estimation Files [BPM 210.100]

- Extract of 2020 Decennial CUF (State-level) [RPO/DSSD]
- Extract of 2020 Decennial CEF [RPO/DSSD]
- 2010 Master Address File (MAF) [MAF/TIGER]
- 2010 Tabulation Block to BCU Relationship File [MAF/TIGER]
- 2020 Tabulation Block to BCU Relationship File [MAF/TIGER]
- 2020 Collection MAF Extract [MAF/TIGER]
- 2020 Tabulation MAF Extract [MAF/TIGER]
- Final Collection GRF-C/N [MAF/TIGER]
- Final Tabulation GRF-C/N [MAF/TIGER]
- Combo MAFX/MAFOP File [DSSD]
- Contact Strategy Tract File [DSSD]
- 2010 CCM Estimation File [DSSD]
- "Take Ten" File [DSSD]
- American Community Survey Files [ACS]
- Planning Database [ACS]
- LEHD Data [CES]
- Final Path Status File

CMDE: 160.70 Create E-Sample Person File

Purpose: This process creates the E-Sample person file. This file defines the E-Sample universe and is needed for estimation.

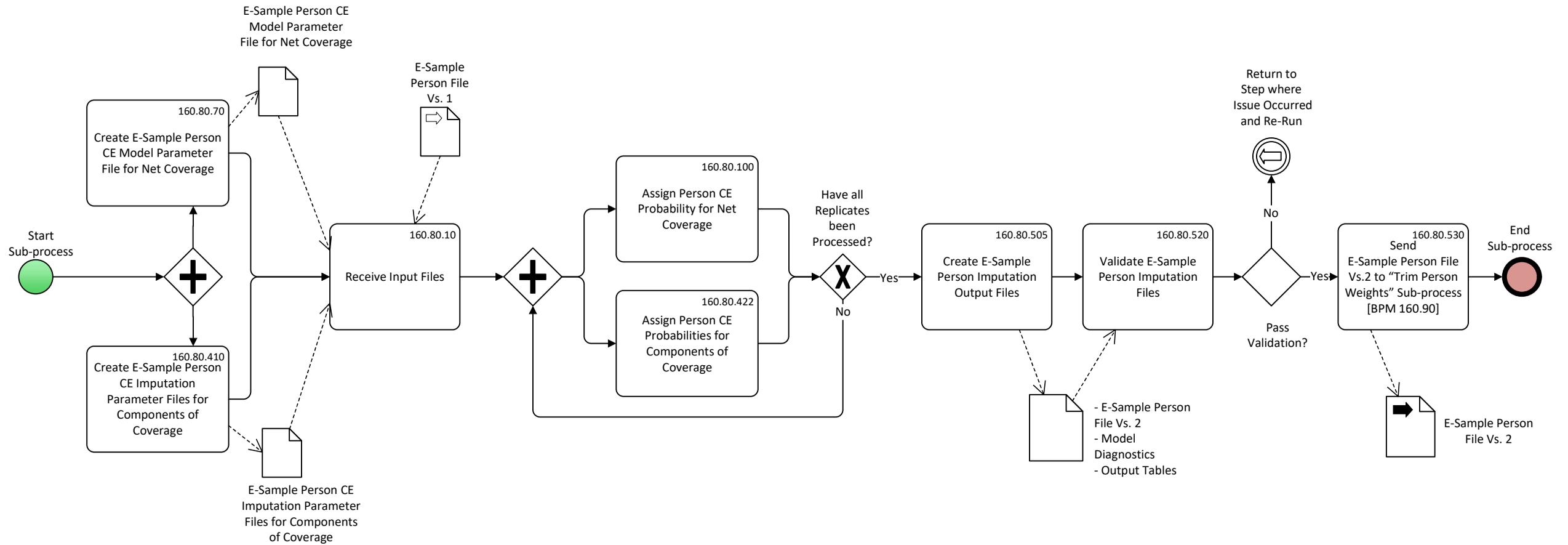




CMDE: 160.80 Impute E-Sample Enumeration Status for People

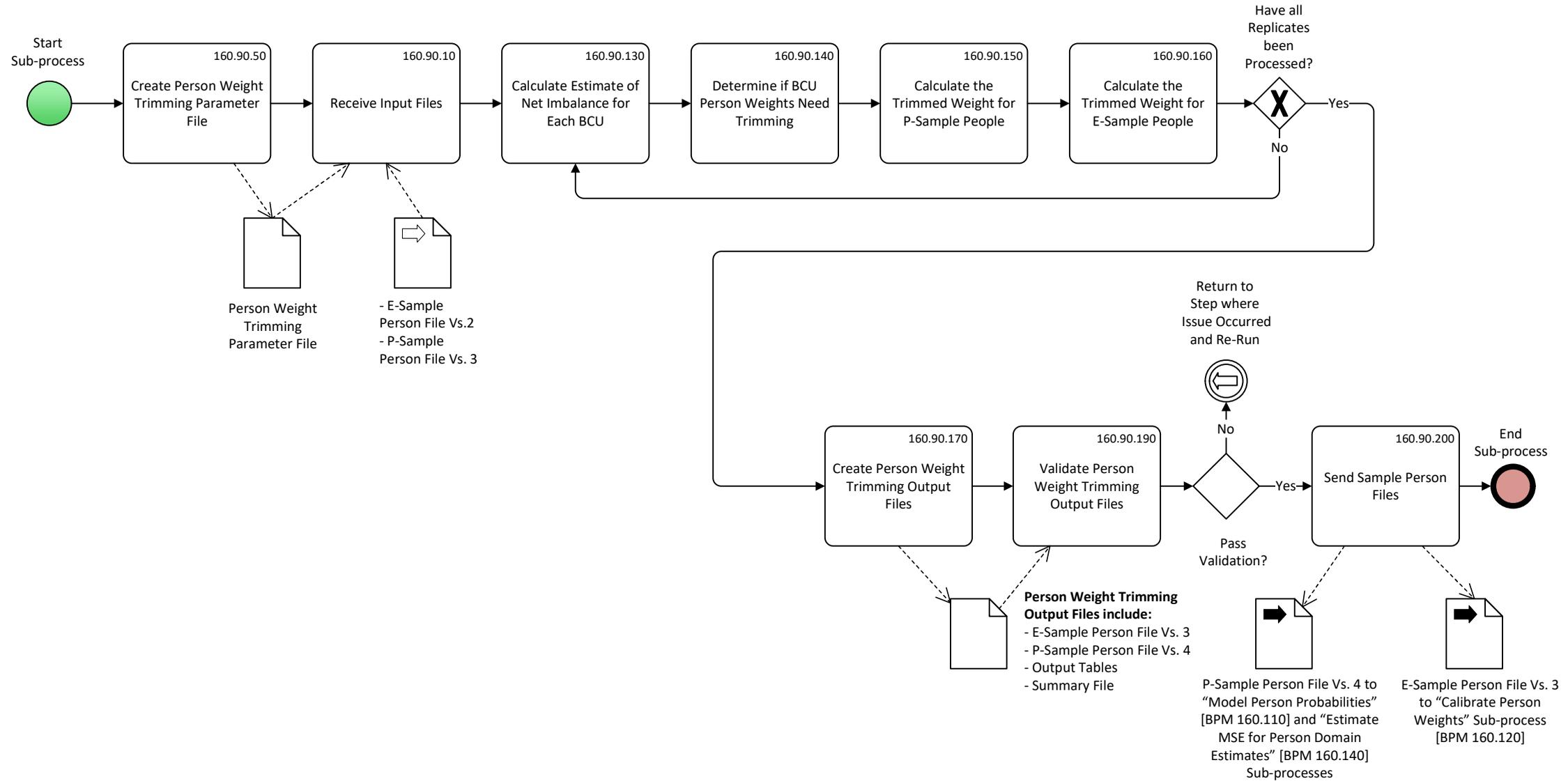


Purpose: This process imputes the correct enumeration (CE) status probability for E-Sample people with unresolved correct enumeration status.



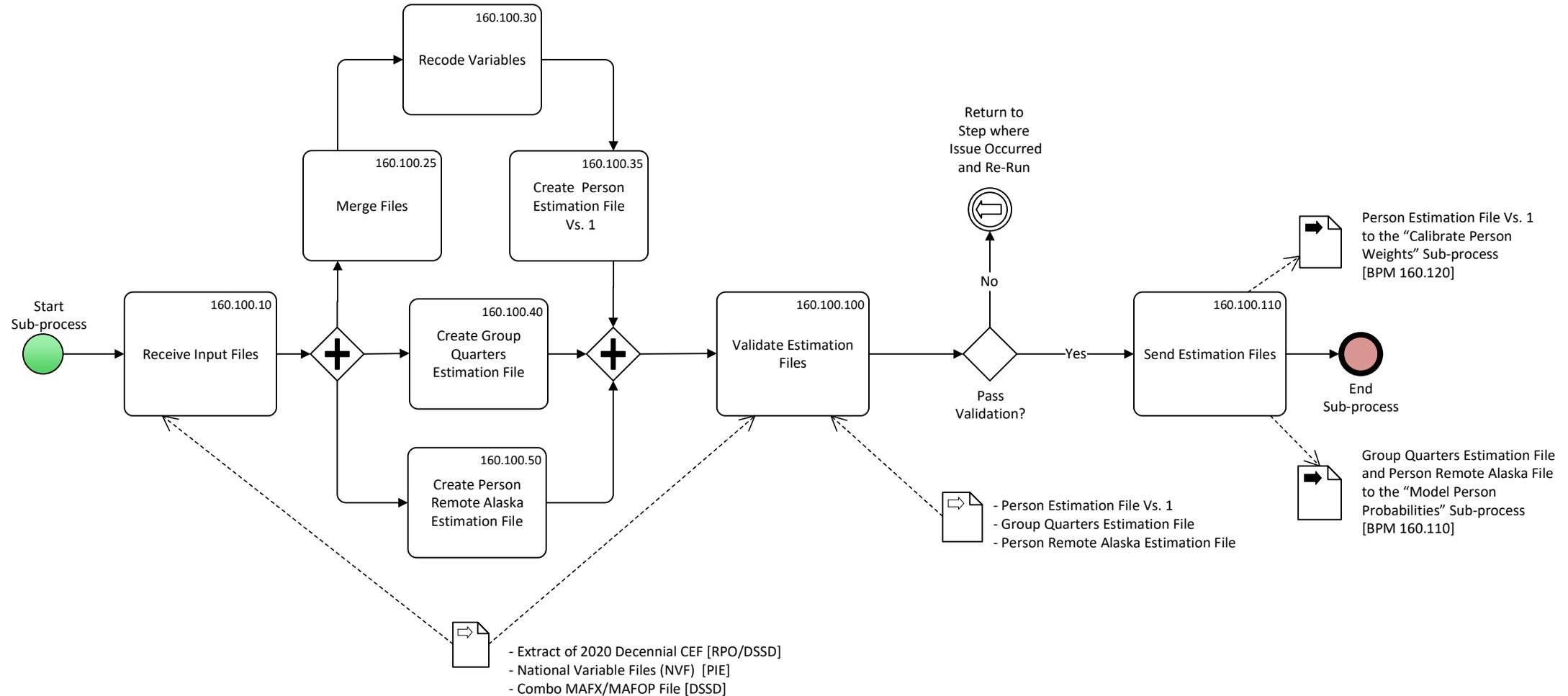
CMDE: 160.90 Trim Person Weights

Purpose: The weight trimming procedure is designed to reduce the sampling weights for BCUs that could have extreme influence on the dual-system estimates and variances.



CMDE: 160.100 Create Person Estimation Files

Purpose: This process creates the Person Estimation Files needed to create dual-system estimates and to calibrate person weights.

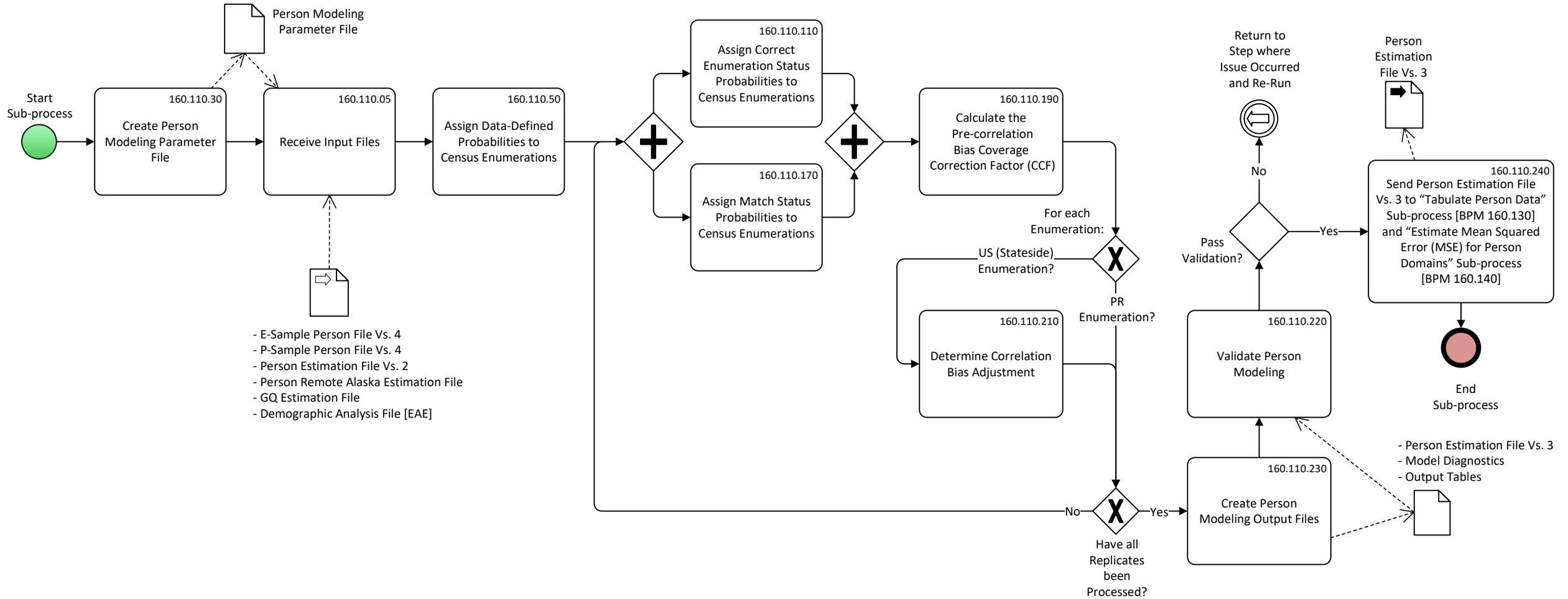




CMDE: 160.110 Model Person Probabilities

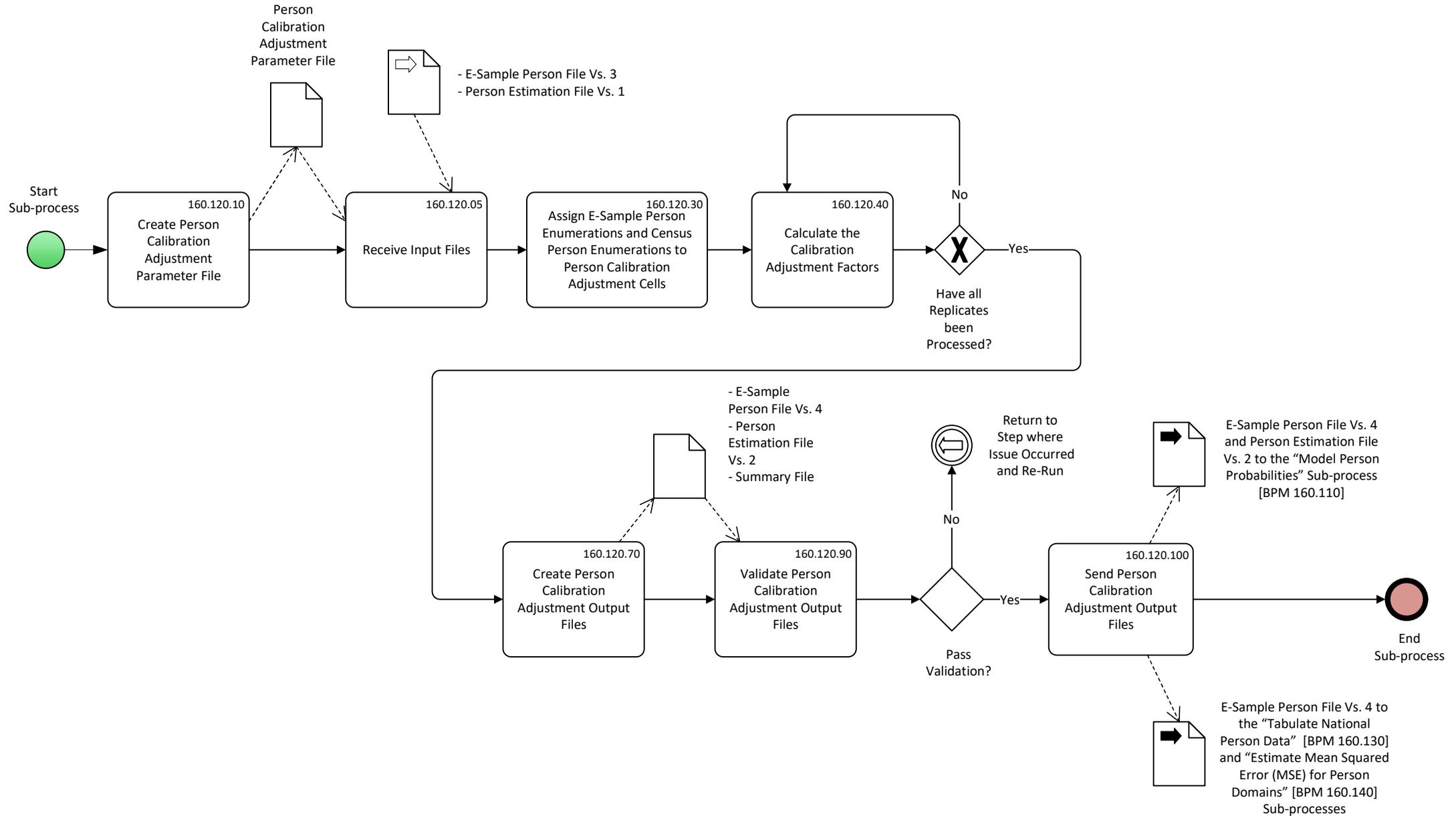


Purpose: This process creates probabilities that are used to assign coverage correction factors (an essential result for net coverage estimation) and then conducts an adjustment for correlation bias using information from demographic analysis.



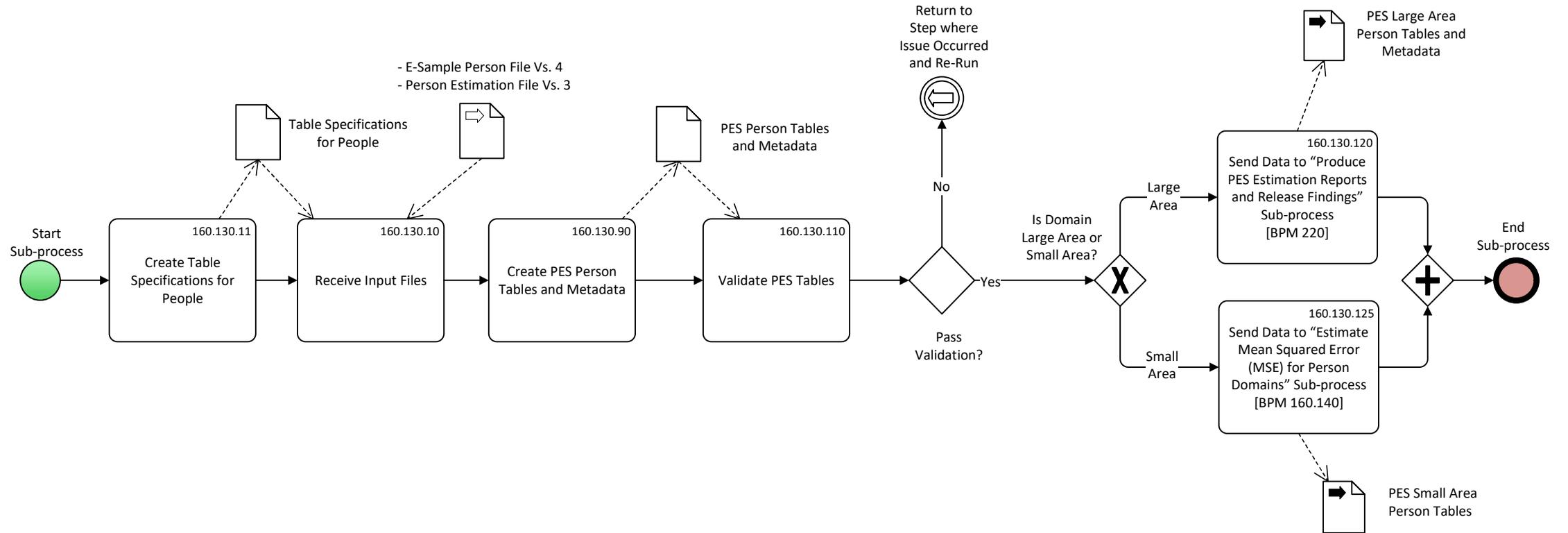
CMDE: 160.120 Calibrate Person Weights

Purpose: This process creates calibration weighting adjustments used to reduce the variability of the final person estimates and to ensure that the sum of the component estimates is equal to the total number of census enumerations for certain estimation domains.



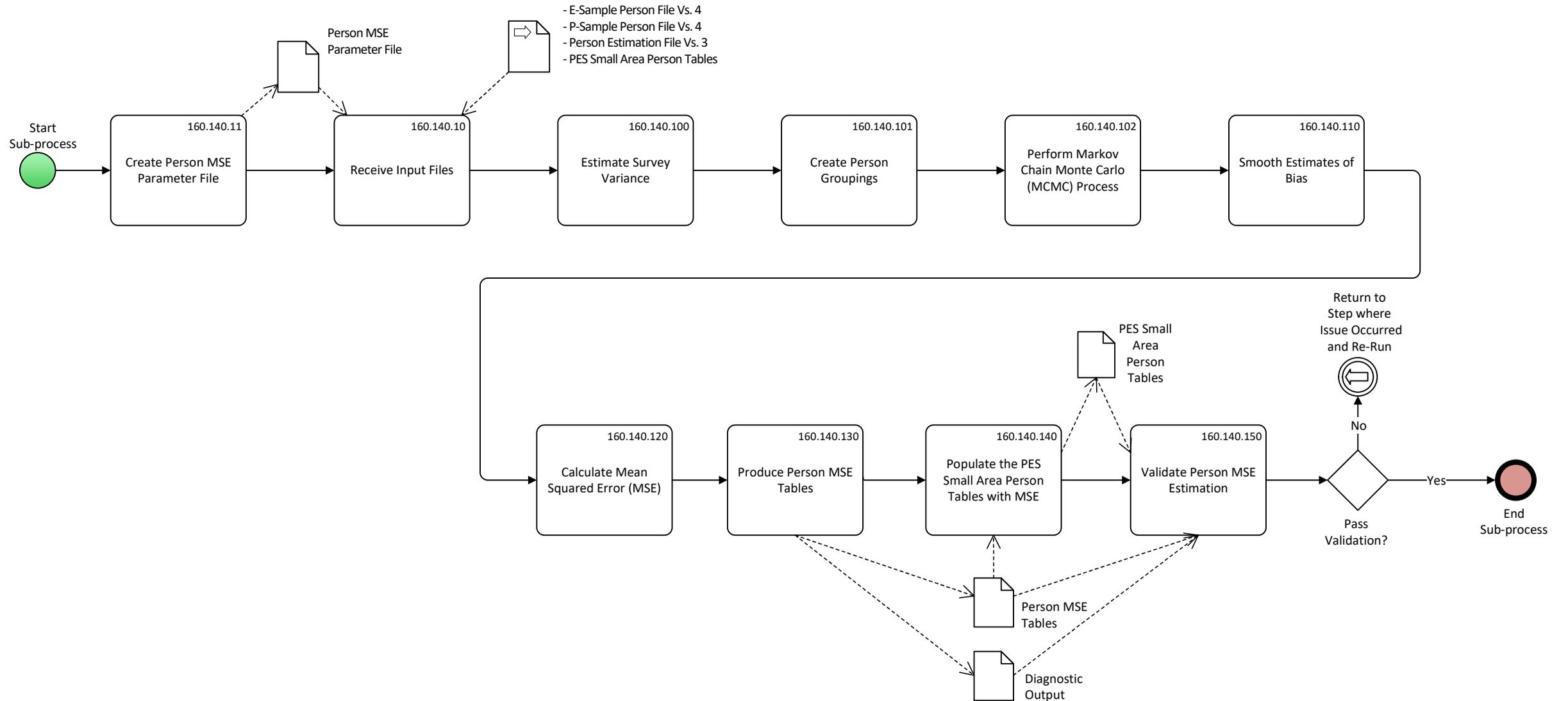
CMDE: 160.130 Tabulate Person Data

Purpose: This process creates tables containing estimates of net coverage and components of coverage for people in housing units.



CMDE: 160.140 Estimate Mean Squared Error (MSE) for Person Domains

Purpose: This process create estimates of mean squared error for small area person domains.





CMDE: 210 Produce PES Housing Unit (HU) Estimates



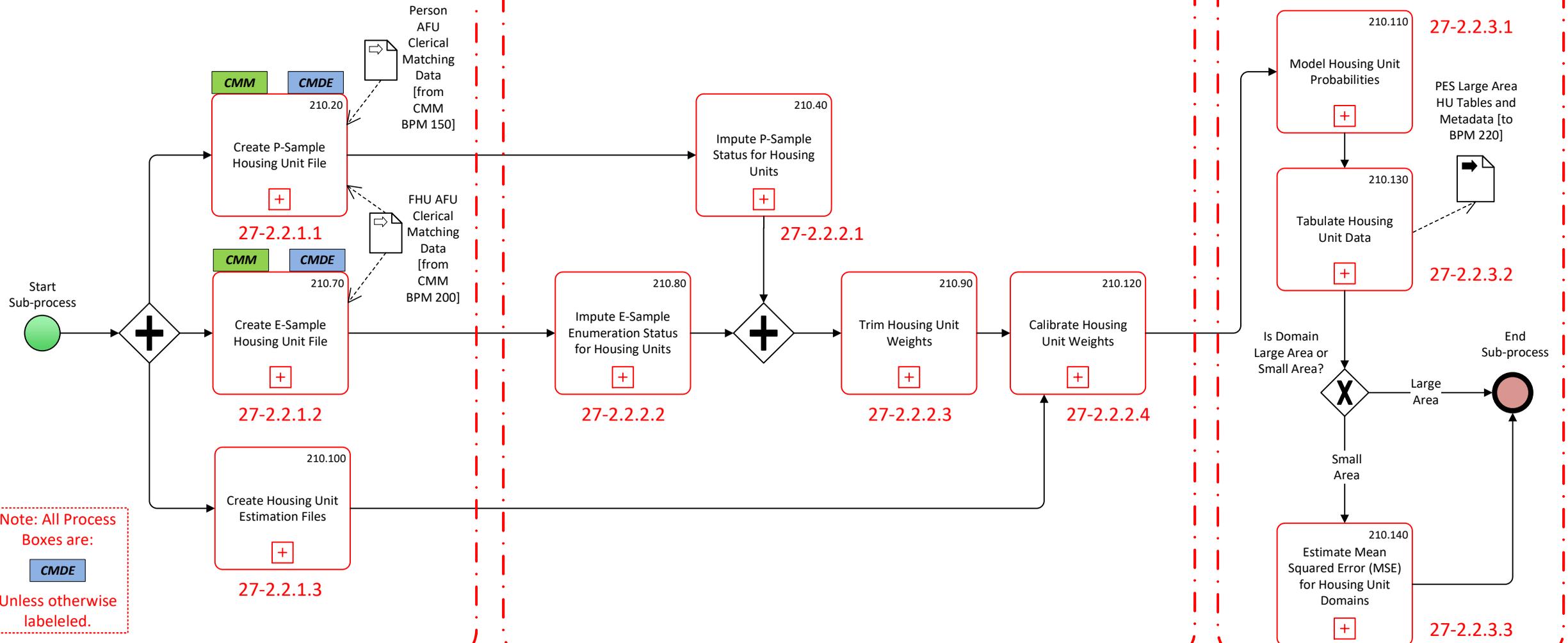
Purpose: The PES housing unit estimation produces estimates of housing unit coverage for the decennial census.

27-2.2 Produce PES Housing Unit (HU) Estimates

27-2.2.1 Process Inputs for PES Housing Unit Estimates

27-2.2.2 Perform Imputation and Weighting for PES Housing Unit Estimates

27-2.2.3 Perform Estimation and Tabulation for PES Housing Unit Estimates

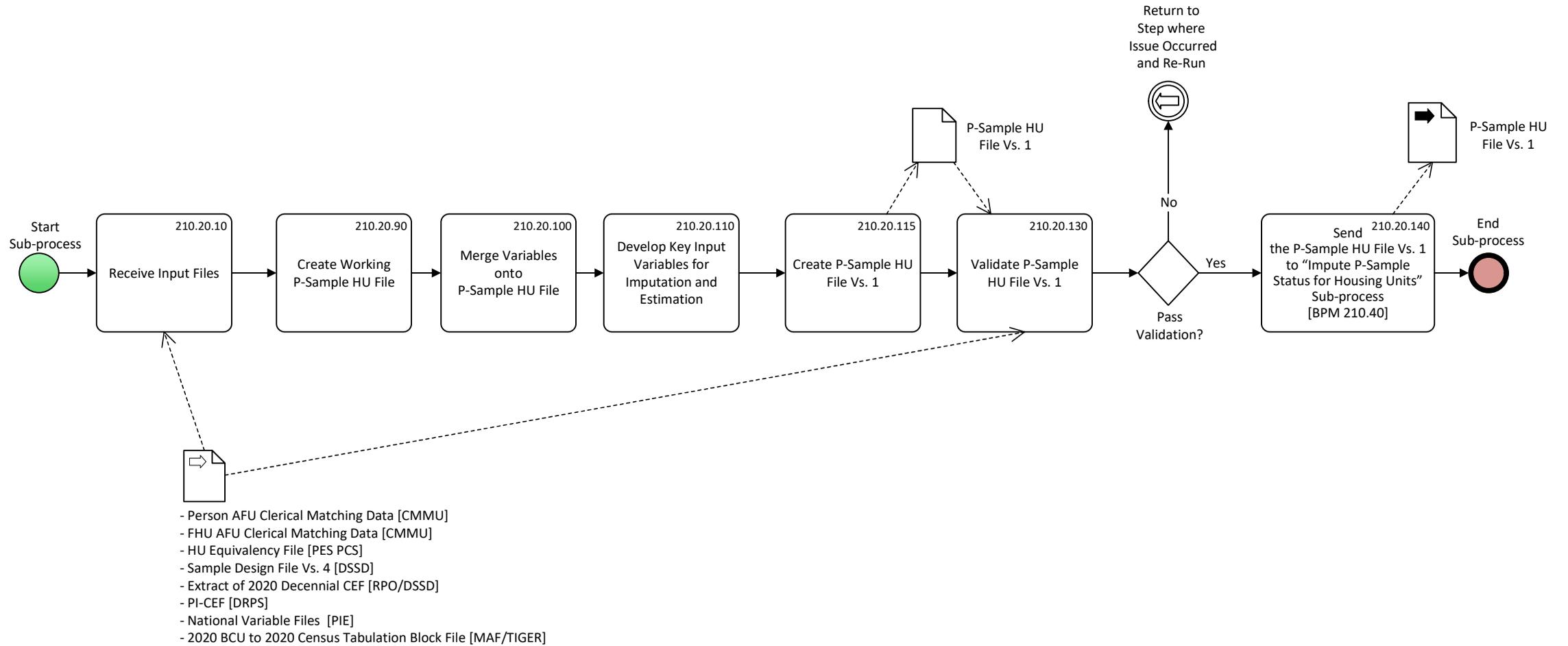




CMDE: 210.20 Create P-Sample Housing Unit File

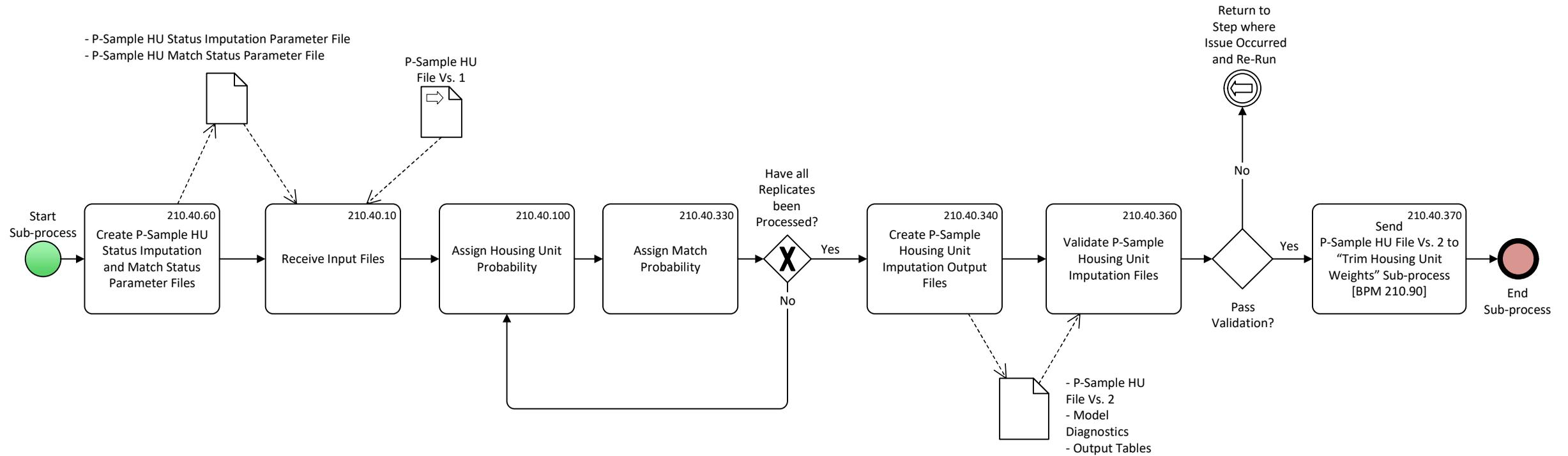


Purpose: This process creates the P-Sample HU file. This file defines the P-Sample universe and is needed for estimation.



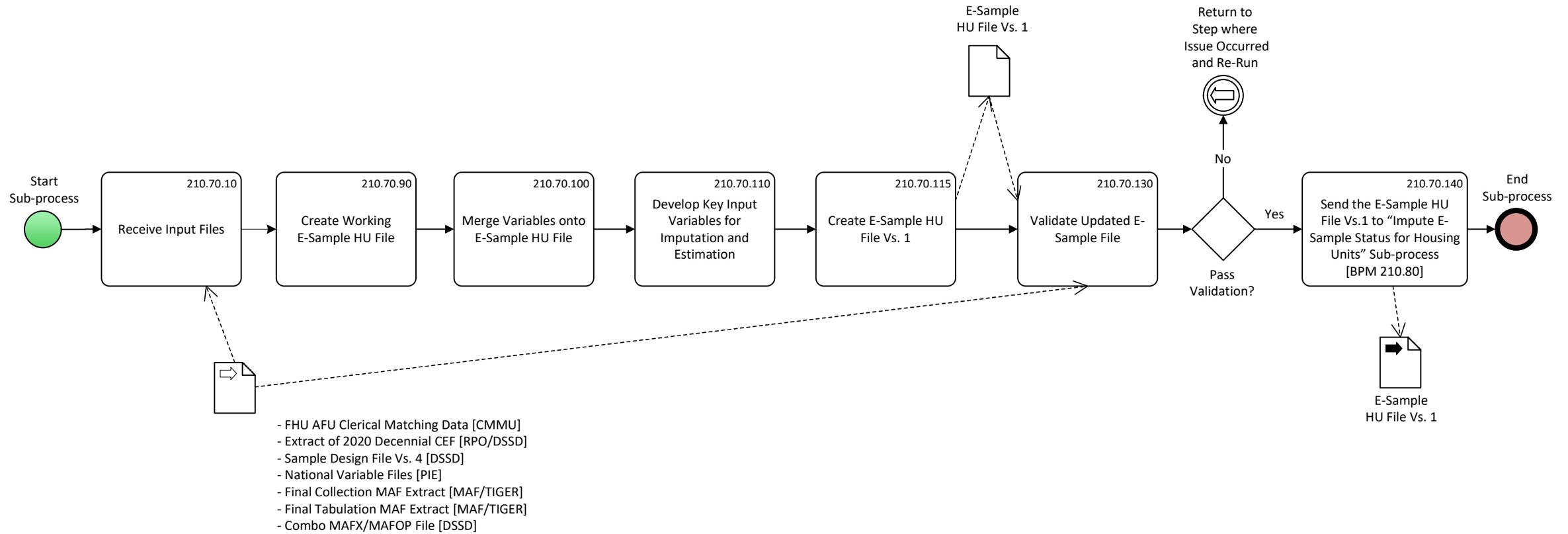
CMDE: 210.40 Impute P-Sample Status for Housing Units

Purpose: This process imputes the housing unit (HU) status probability and match status probability for P-Sample housing units with unresolved HU status or match status.



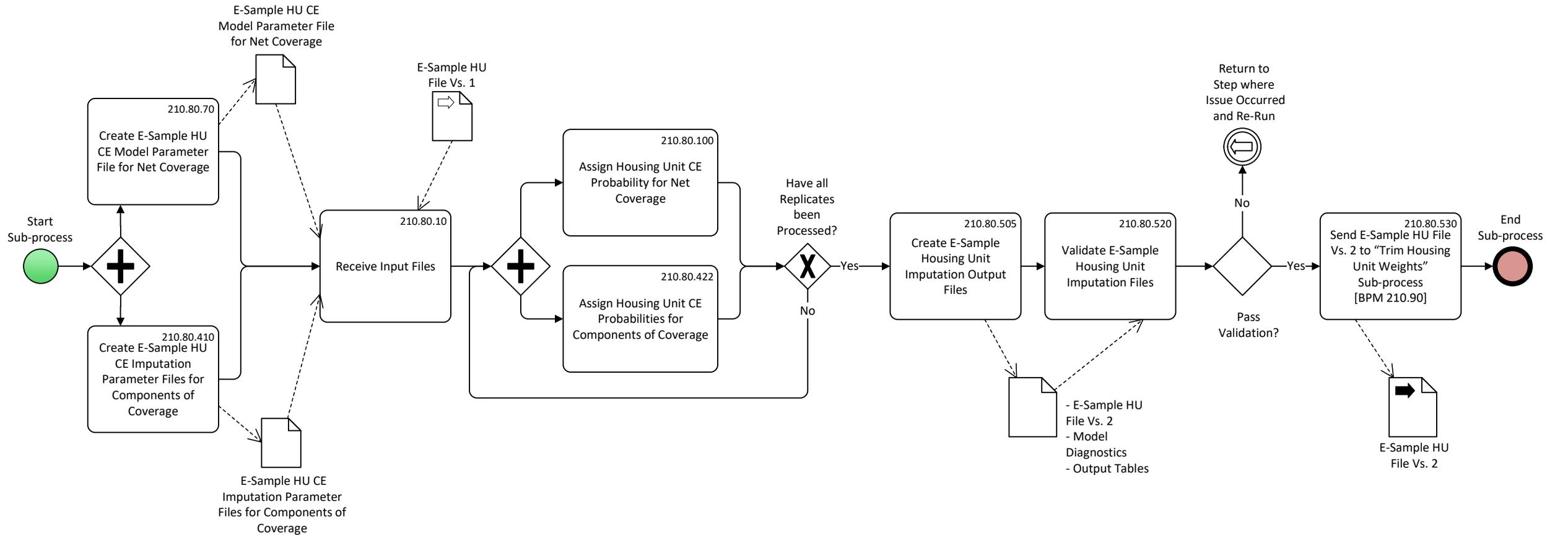
CMDE: 210.70 Create E-Sample Housing Unit File

Purpose: This process creates the E-Sample HU file. This file defines the E-Sample universe and is needed for estimation.



CMDE: 210.80 Impute E-Sample Enumeration Status for Housing Units

Purpose: This process imputes the correct enumeration (CE) status probability for E-Sample housing units (HU) with unresolved correct enumeration status.

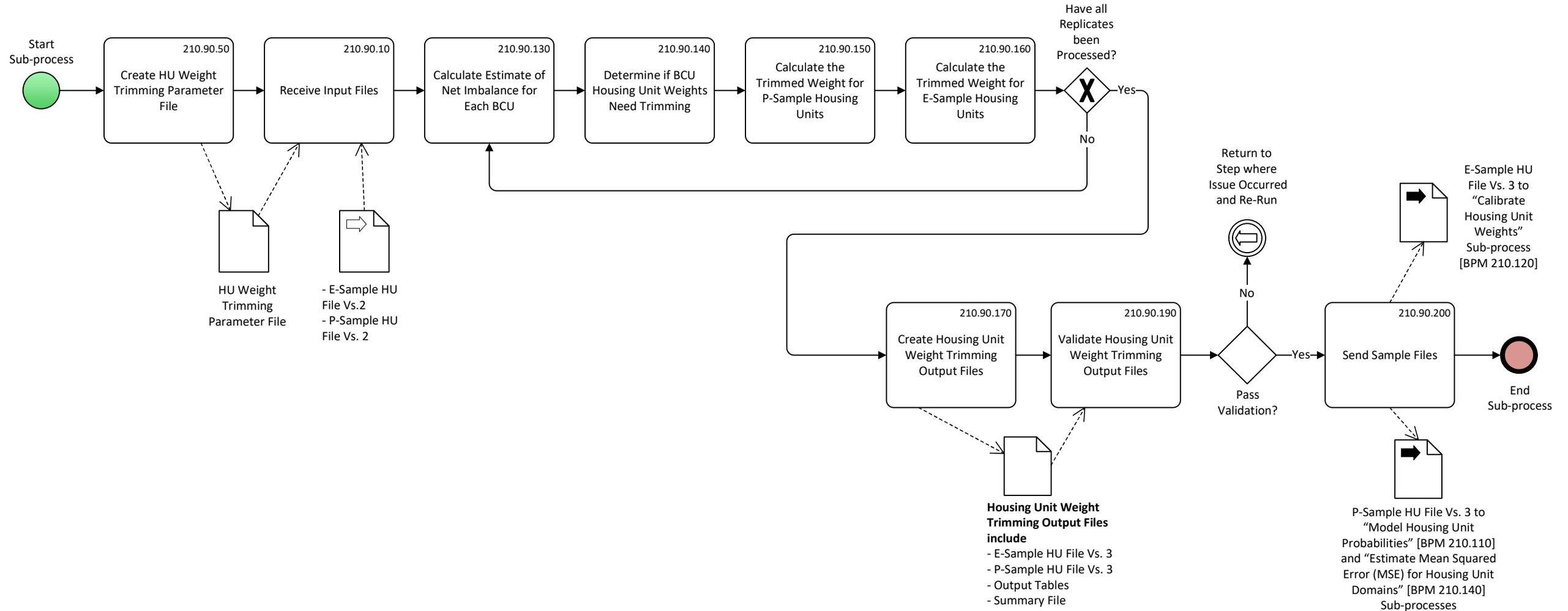




CMDE: 210.90 Trim Housing Unit Weights

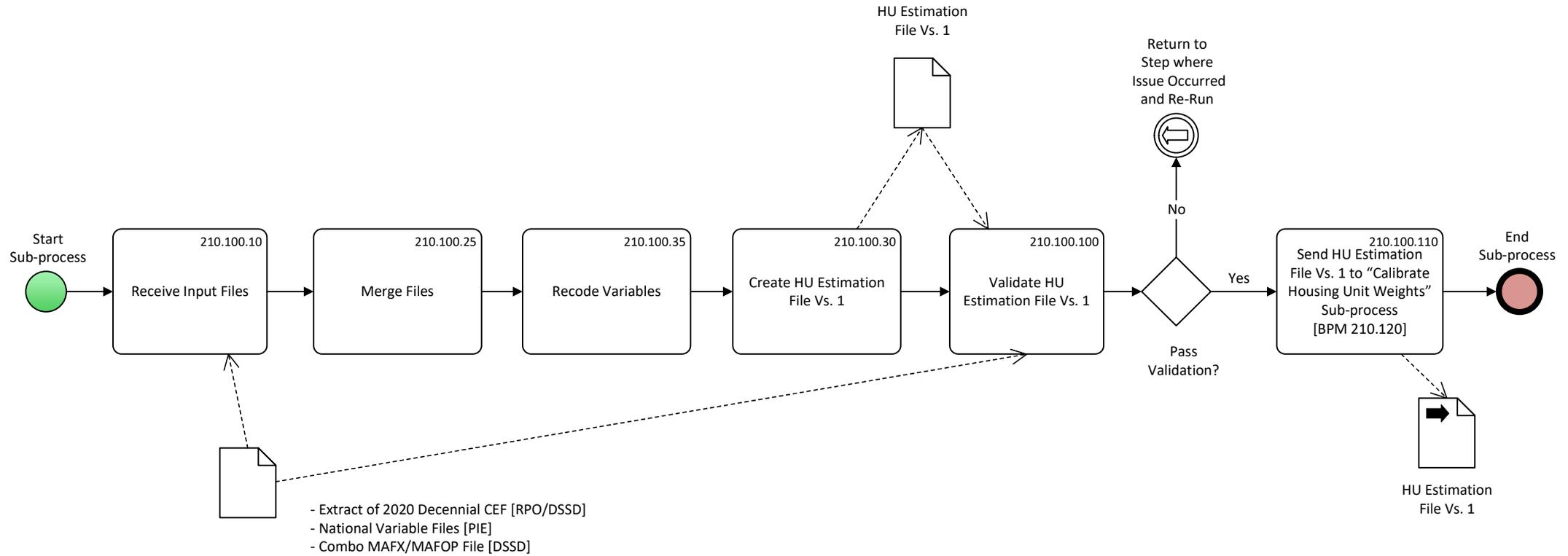


Purpose: The weight trimming procedure is designed to reduce the sampling weights for BCUs that could have extreme influence on the dual-system estimates and variances.



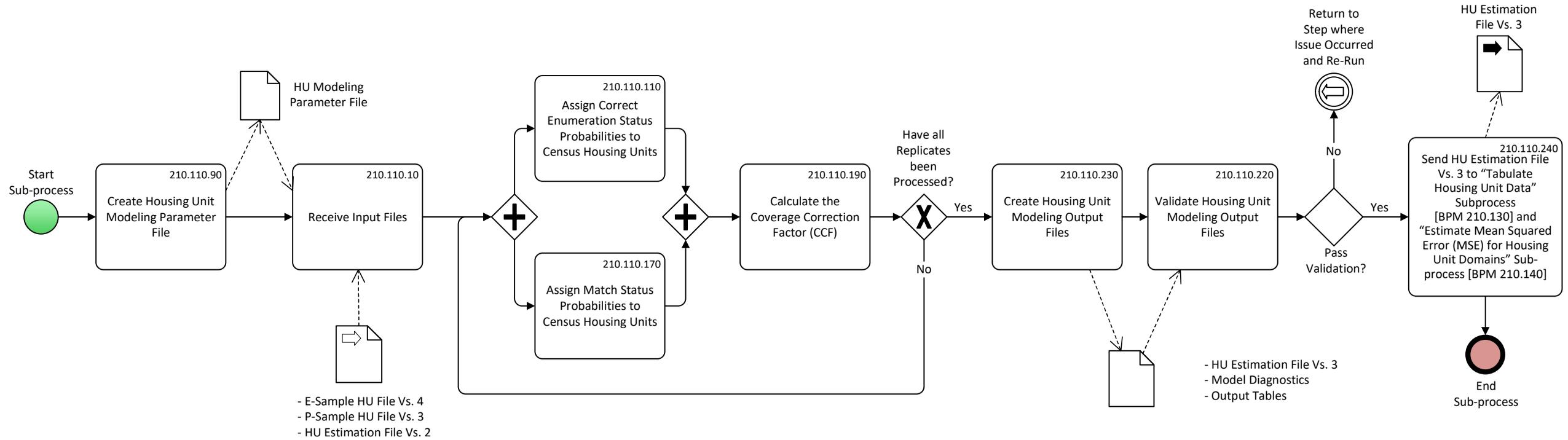
CMDE: 210.100 Create Housing Unit Estimation Files

Purpose: This process creates the Housing Unit Estimation Files needed to create dual-system estimates and to calibrate housing unit weights.



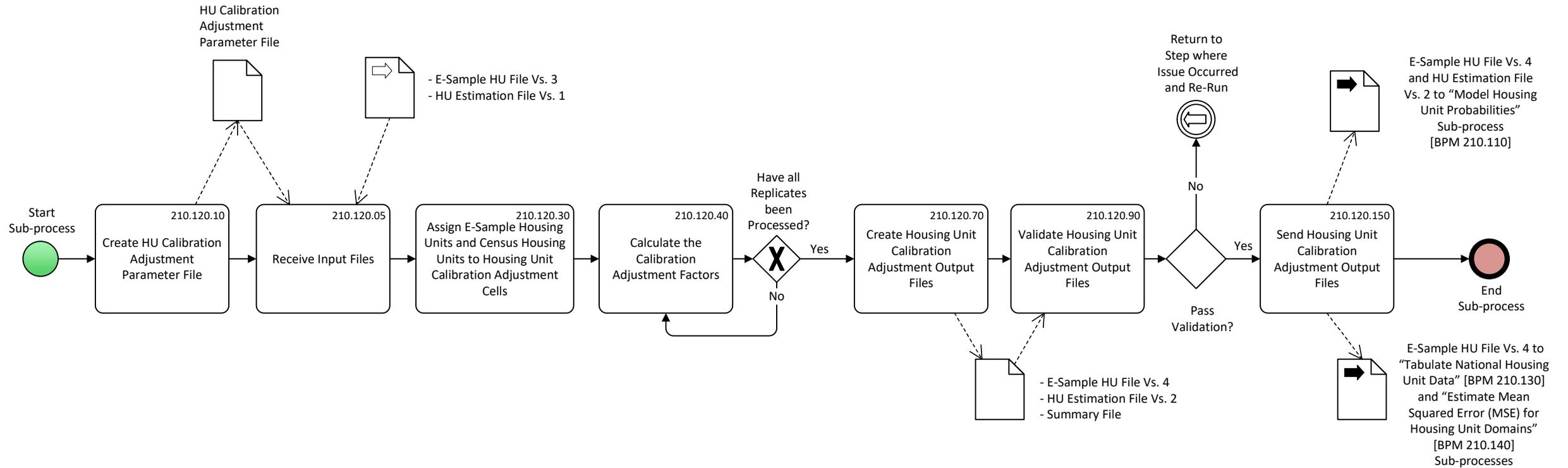
CMDE: 210.110 Model Housing Unit Probabilities

Purpose: This process creates probabilities that are used to assign coverage correction factors, an essential result from net coverage error estimation.



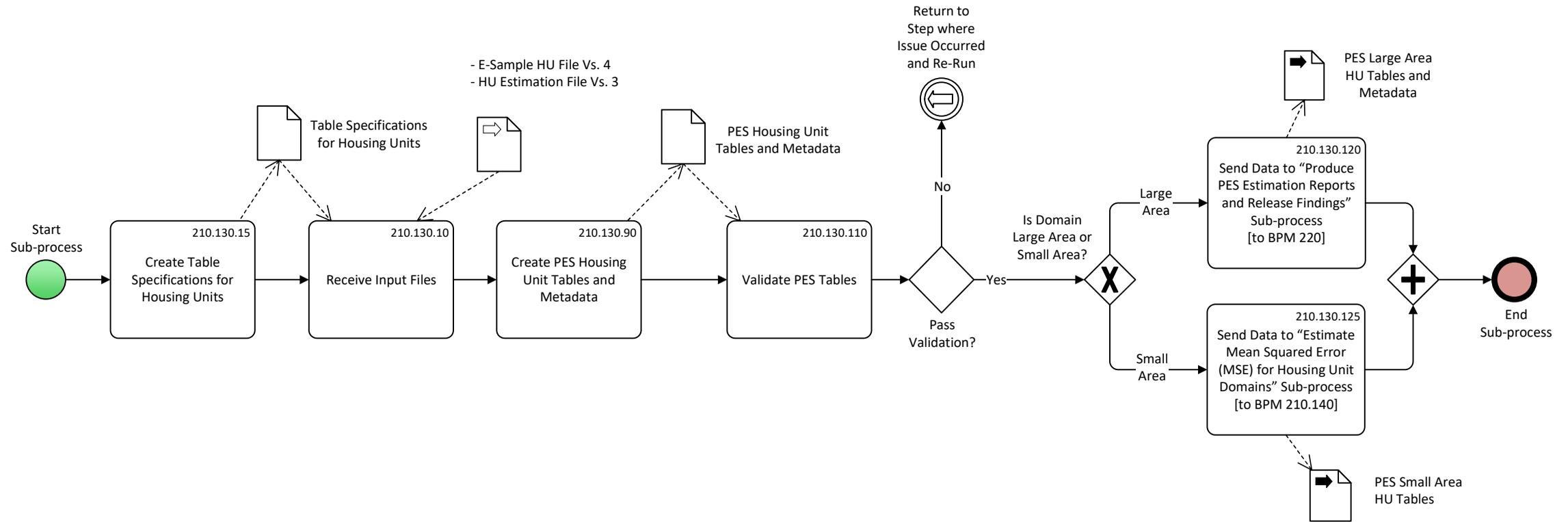
CMDE: 210.120 Calibrate Housing Unit Weights

Purpose: This process creates calibration weighting adjustments used to reduce the variability of the final housing unit (HU) estimates and to ensure that the sum of the component estimates is equal to the total number of census enumerations for certain estimation domains.



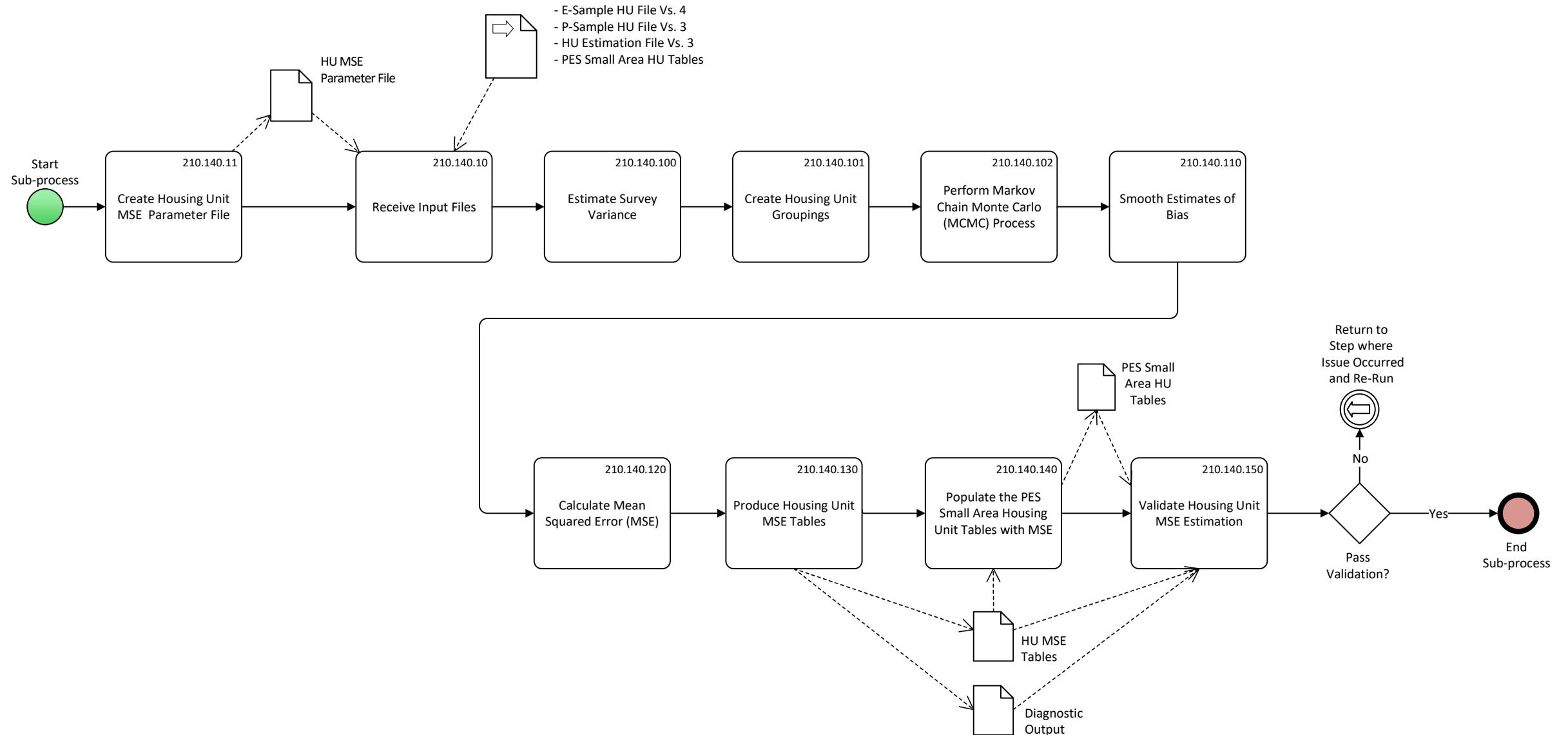
CMDE: 210.130 Tabulate Housing Unit Data

Purpose: This process creates tables containing estimates of net coverage and components of coverage for housing units.



CMDE: 210.140 Estimate Mean Squared Error (MSE) for Housing Unit Domains

Purpose: This process create estimates of mean squared error for small area housing unit domains.





CMDE: 220 Produce PES Estimation Reports and Release Findings

Purpose: This process produces reports describing census coverage for housing units and people within housing units within the US and disseminates these findings to the public.



27-2.3 Produce PES Estimation Reports and Release Findings

